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Zero In

America's K-12 Education Strategy

Sramana Mitra, 01.15.10, 06:00 AM EST

Technology is addressing the dysfunctions in education.

Sramana Mitra



About five years back, I did some research on middle school and high school math and science education and interviewed a number of teachers and parents at various high schools throughout the [Bay Area](#), deriving direct, experiential feedback from the field.

At San Francisco's Galileo High School, Chris Kaegi, a bright young math teacher, shared a particularly important perspective: "I have a general sense of my students' skill gaps, but I have 180 students, so even if I know the weak areas, I can't do anything about it." It became clear to me that there was no standardized methodology of teaching, and there was no methodology for personalized skill-gap analysis.

Another problem loomed large. "With an average annual salary of only about \$43,000, teaching does not compare favorably with other professional opportunities available to talented individuals," a 2002 National Education Association Research study reported. Less than a third of the teachers and tutors in math and sciences had relevant backgrounds. American schools expected these teachers to come up with the teaching methodology, then execute on it.

In the last few months, I have spoken with a number of companies that are trying to address this dysfunction by providing software solutions to help diagnose gaps in kids' learning and address them with personalized solutions. In some cases, these companies are running full-fledged online schools.

Says Ron Packard, CEO of online learning company K12, "When my daughter was in first grade, I was helping her with her math. I did not think that she was getting enough. I went online to buy a

math course that would be world-class. I found plenty of supplemental sites, but I did not find a full math course anywhere. That gave me the crazy idea that it would be possible to build an entire school online. I wrote a business plan to create an online school."

K12 now offers 21,000 hours of content. "We developed online lessons to cover every learning day of school. We have a lesson for every single day, from kindergarten to 12th grade," Packard says. The company runs its own private online school, as well as provides technology, content, management services and training to another 40 online public schools. All told, it caters to 70,000 students and has almost \$400 million in revenue.

Notice, though, that typical public school kids are not at K12. "The range of kids is enormous, but they all share one thing in common: a local school that for some reason is not meeting their needs. If your child is perfectly happy in his school, then he is probably not coming over. We get kids who are highly gifted and work three to four grade levels ahead of where they are chronologically. We get a lot of kids with special needs, especially kids with autism. They come to us in droves. We get a lot of kids who are socially conservative. The values taught in the public schools do not match their family's values. We have a lot of kids who are serious athletes in our programs. Some of the serious golfers have to be golfing all day. They are doing our programs because their sports are so demanding."

The obvious question that comes to mind is whether the technology is effective. "If you are a student, you would take an assessment, and we deliver a customized curriculum to fill in your gaps. We have also done some pilots where we take our curriculum and put it in a physical classroom with teachers. We are seeing 10-20 points gain per year in student performance without changing the staffing of the school," Packard says. (More on K12 in my interview with Packard [here](#).)

Apex Learning, founded in 1997, has built its business by offering technology-based distance learning solutions for advanced placement courses as well as curriculum to help failing high school kids. Apex sells its courses to public schools where teachers often deliver those courses in a classroom setting. "In a traditional classroom model, it is the role of the teacher to stand up and deliver the content and work with the entire class. When our courses are used, the classroom is set up very differently because it is computer-centric. In the most extreme cases students are working on completely different courses. Even when they are working on the same courses, they are working at their own pace. The teacher is working one-on-one with small groups or individual students. They are moving from 'sage on the stage' to 'guide on the side,'" explains Apex Learning CEO Cheryl Vedoe.

Vedoe believes that Apex can build a \$100 million company serving the at-risk population. "There are over 1 million students who drop out of high school every year. Keeping them is a very substantial opportunity. We estimate there are anywhere from 6 million to 10 million secondary students who are not performing at a proficient level. Approximately 70% of eighth graders are below proficiency in both reading and math. When you get to 12th grade, the data is not that different. We

think the target market for the programs we offer is quite significant; there are approximately 15 million secondary students."

Revolution Prep is one more company working in online education. "We have found that when a student fails an eighth-grade math problem, it is because they are missing third- or fourth-grade math standards such as adding fractions. Our software identifies those gaps and delivers content to teach the missing concepts," explains founder Ramit Varma.

Los Angeles Unified School District, the second-largest district in the country, works with Revolution Prep to provide its software to all 11th and 12th graders in the district who have not passed the state exit exams. In this case, teachers are providing oversight, but primarily it is students working with the program one-on-one, akin to Vedomie's "guide on the side" model.

If teachers all across America (and the world) can be motivated to use technologies such as those offered by K12, Apex and Revolution Prep, the entire K-12 education problem will become tractable. The "guide on the side" model takes off a lot of the pressure on teachers in terms of lesson plan design and content delivery. If they act as classroom supervisors rather than domain experts, allowing technology to play the latter role, the likelihood of children learning better even from teachers who do not have the appropriate background is considerably higher.

Maybe President Obama needs to mandate the use of a certified online curriculum for all public schools to give America's K-12 kids a chance to become competitive in the 21st century!

Sramana Mitra is a technology entrepreneur and strategy consultant in [Silicon Valley](#). She has founded three companies and writes a business blog, [Sramana Mitra on Strategy](#). She has a master's degree in electrical engineering and computer science from the [Massachusetts Institute of Technology](#). Her three books, [Entrepreneur Journeys](#), [Bootstrapping](#), [Weapon Of Mass Reconstruction](#) and [Positioning: How To Test, Validate, and Bring Your Idea To Market](#), are all available from Amazon. Her new book [Vision India 2020](#) comes out this February.